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ENGINEERING DATA TRANSMITTAL

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TWRS Safety and Licensing	M. S. Twiselton	N/A
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16. KEY

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		Design Authority				1	1	Auth Basis Mgr. J. J. Klos		8/16/96	
		Design Agent				1	1	TF PRC Chairman J. E. Truax		8/16/96	
1	1	Cog.Eng. M. S. Twiselton				1	1	East Tank Farm Transition Project		8/16/96	
1	1	Cog. Mgr. J. G. Propson				1	1	West Tank Farm Transition Project		8/16/96	
1	1	QA		8/16/96		1	1	242-A Evaporator Project		8/16/96	
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18. J. G. Propson — Signature of EDT Originator — Date 8-15-96

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Tank Farms Justification for Continued Operations 007 Implementation Plan

J. J. Klos
Westinghouse Hanford Company, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

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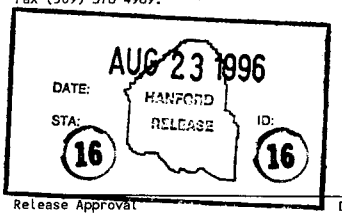
Abstract: This Implementation Plan (IP) provides detailed descriptions, cost estimates, and schedules of activities required to implement the controls specified in "Flammable Gas/Sluury Growth Unreviewed Safety Question: Justification for Continued Operation for the Tank Farms at Hanford Site" (WHC-SD-WM-JCO-007, Rev.0). This IP complies with the Interim Operational Safety Requirements (IOSR) Administrative Control 5.27 and WHC-IP-0842 Volume 4 Section 5.6 for such a plan.



Release Approval Date

Pamela K Salazar 8/23/96
Release Stamp

Approved for Public Release

1.0 EXECUTIVE SUMMARY

The purpose of this Implementation Plan (IP) is to provide detailed descriptions, cost estimates, and schedules of activities required to implement the controls specified in "Flammable Gas/Slurry Growth Unreviewed Safety Question: Justification for Continued Operation for the Tank Farms at Hanford Site" (WHC-SD-WM-JCO-007, Rev. 0). This IP complies with the Interim Operational Safety Requirements (IOSR) Administrative Control 5.27 and WHC-IP-0842 Volume 4 Section 5.6 for such a plan.

The JCO provides a basis for allowed conditions, operations, and activities in all Single Shell Tanks (SSTs), Double Shell Tanks (DSTs) (with the exception of SY-101), Aging Waste Facility Tanks (AWF), Double Contained Receiver Tanks (DCRTs), Catch Tanks, and Inactive Miscellaneous Underground Storage Tanks (IMUSTs) relative to flammable gas hazards. This JCO does not preclude any ongoing or future Safety Assessment for any tank or tanks at TWRS. Due to the fact that a Safety Assessments deal with specific pieces of equipment or situations, controls addressed in the JCO are not meant to override the specific assessments addressed in specific instances justified by Safety Assessments which are subsequently approved by DOE and incorporated into the TWRS Authorization Basis.

For each of the ignition source, ventilation, and monitoring controls listed in the flammable gas JCO, one of the following possible outcomes will apply:

1) Immediate and full implementation for a given control and/or facility.

2) Curtailment of those operations and activities which are not in compliance until implementation of controls as specified in the JCO can be achieved.

3) Justification for alternative yet functionally equivalent controls, as identified in the JCO implementation plan, that are reviewed through the USQ evaluation process and are approved by the newly formed Flammable Gas Equipment Advisory Board.

4) Facility and/or activity-specific justification that the hazards posed by waste-generated flammable gas merit no particular controls or less stringent controls than specified in the JCO. This alternative requires preparation of authorization and safety basis documentation compliant with DOE 5480.23 and quantitative comparison of accident frequencies and consequences with the radiological and toxicological risk guidelines found in WHC-CM-4-46. This approach requires a change to the TWRS Authorization Basis, and hence, DOE approval.

5) DOE explicitly accepts the interim risk of non-compliance for a finite time period prior to full implementation.

One of the key components to the IP is to ensure that the control sets specified in the JCO are fully integrated into all applicable documents. The ventilation controls will be detailed in new IOSR LCOs and ACs while the monitoring and ignition source controls will be integrated into AC 5.29.2 and 5.29.1. Following the issuance of this new documentation, the scope of OSD-030 shall be reduced to only the flammable gas watch list, OSDs-007/013/017 for flammable gas shall be eliminated, and applicable field procedures modified. Those flammable gas controls that are being eliminated but are still required by the ACs shall be incorporated into a new OSD to be generated.

2.0 Facility Descriptions and Definitions

242-S Evaporator facility was placed in a shutdown/standby condition in 1985 as documented WHC-SD-WM-SSP-002. Water flushing of the aqueous makeup (AMU) tanks, feed and slurry lines, acid addition lines, tank C-100, and evaporator vessel CA1 was performed to remove all radioactive waste from the system. All lines were blanked following completion of the flushing.

242-T Evaporator process areas operations were discontinued in November, 1980. Document WHC-SD-HS-SAR-009, "242-T Evaporator Facility Shutdown/Standby to Condition V Safety Analysis Report," was issued to maintain the facility process areas in a safe shutdown mode until decommissioning work is initiated.

244-AR Vault facility is an inactive canyon building that was used to handle transfers and provide lag storage for wastes. This facility includes 4 storage tanks: TK-001, TK-002, TK-003 and TK-004.

Catch Tanks are underground storage tanks used to collect small amounts of waste from diversion boxes, valve pits, and other waste transfer system equipment. Newer catch tanks are contained within concrete vaults which provide secondary containment while older catch tanks are buried directly in the ground. Generally, catch tanks are located below pits that contain pumps and leak detection equipment.

Continuing Monitoring is defined as use of a continuous monitor (e.g., SHMS) or use of portable CGMs with readings read at least every 15 minutes.

DOE Approval shall be defined as the approval of the Flammable Gas JCO (WHC-SD-WM-JCO-007, Rev 0) and this Implementation Plan by the Department of Energy, Richland Operations Office. For any item listed in this Implementation Plan that requires additional funding above current authorization levels, this definition shall be expanded to include the approval of additional funding sufficient to cover all expenses necessary to implement the controls.

Double Contained Receiver Tanks (DCRTs) are used as lag storage facilities for supernatant and interstitial liquids for SSTs which are being pumped to complete the interim stabilization process.

Entry Monitoring is defined as use of a CGM, grab sample, or SHMS cabinet to determine flammable gas concentrations for a particular tank/riser/pit prior to manned activities.

Facility Group 1 consists of five tanks: AN-103, -104, -105, AW-101, and SY-103 that have undergone observed, significant Gas Release Events (GREs). These tanks are conservatively postulated to have the potential for large spontaneous and large induced GREs.

Facility Group 2 consists of the remaining DSTs (excluding SY-101) and AWF tanks as well as the following SST tanks: A-101, 103, B-201, 202, BX-107, BY-101, 102, 103, 105, 106, 109, C-104, S-101, 102, 103, 105, 107, 109, 111, 112, SX-101, 102, 103, 105, 106, 109, T-110, 201, 202, 204, TX-102, 111, 112, 113, 115, U-102, 103, 105, 106, 107, 108, 109, 111. Additionally, the following IMUSTs are considered to be part of Facility Group 2: 216-BY-201, 216-TY-201, 240-S-302, 241-TX-302B, 241-TX-302B(R), 241-SX-302, 241-TX-302X, 241-AX-151, 241-A-302B, 241-B-301B, 241-S-302A, 241-T-301, 241-ER-311A, 243S-TK-1, 241-BX-302C, 242-T-135, 242-TA-R1, 241-C-301C, 241-B-302B, 244-BXR-003, 270-W, and 244-BXR-002. These tanks are conservatively postulated to have the potential for small spontaneous and large induced GREs.

Facility Group 3 consists of the remaining SST tanks not assigned to Facility Groups 1 or 2 and the following IMUSTs: 241-TX-302A, 241-TY-302A, 244-TXR-002, 241-BX-302A, 241-BX-302B, 244-TXR-001, 244-BXR-011, 244-BXR-001, 244-TXR-003, and 241-Z-8. Additionally, 244-BX and 244-AR TK-002 are assigned to Facility Group 3. These tanks are conservatively postulated to have the potential for small induced GREs only.

Globally Waste Disturbing Operations are those operations or activities that could result in significant motion underneath the entire waste surface. Representative examples of global waste disturbing operations are listed in Table 5 of the JCO, WHC-SD-WM-JCO-007, Rev 0.

IMUST tanks 231-W-151-002, 231-W-151-001, 241-TY-302B, and 241-S-302B contain mostly liquids with only a small amount of solids (less than 378.5 L [100 gal]). Therefore, these tanks are conservatively postulated to have no potential for either spontaneous or induced GREs.

Locally Waste Disturbing Operations are those operations and activities that disturb only a small, local portion of the waste. Representative examples of local waste disturbing operations are listed in Table 5 of the JCO, WHC-SD-WM-JCO-007, Rev 0.

Non-tank Waste Transfer System Components consist of all miscellaneous transfer lines, valve pits, diversion boxes, process pits, and transfer line clean out boxes not directly connected to the waste tank vapor spaces.

Non-waste Disturbing Operations include all work activities that do not result in significant motion underneath the waste surface.

Vapor tight barriers such as gasketed and bolted flanges or closed valves are defined per API500. Although hydrogen diffusion may still occur, spark propagation through the vapor tight barrier is postulated to be beyond the incredible range.

3.0 Implementation

3.1 Affected Organizations

The implementation plan for the flammable gas JCO will affect the following organizations:

Authorization Basis, Plant Controls
Authorization Basis Integration
East Tank Farms Transition Project
West Tank Farms Transition Project

3.2 Discussion

The overall strategy for the implementation of WHC-SD-WM-JCO-007, Rev 0 is to ensure that the ventilation, monitoring, and ignition source controls specified in the JCO are fully integrated into all applicable documents. While not specifically related to the JCO, baseline enhancement of existing IOSRs for SSTs, DSTs, and AWFs will greatly enhance clarity. The ventilation controls will be detailed in new IOSR LCOs and ACs while the monitoring and ignition source controls will be integrated into AC 5.29.2 and 5.29.1. Following the issuance of this new documentation, the intent shall be to reduce the scope of OSD-030 to only the flammable gas watch list, eliminate the flammable gas portions of OSDs-007/013/017, and modify applicable field procedures.

3.2.1 Ventilation Controls

The flammable gas JCO (WHC-SD-WM-JCO-007, Rev 0) postulated that the current IOSR, OSR, and OSD requirements related to ventilation are adequate in maintaining flammable gas concentrations well within established limits. For this reason, no additional ventilation controls were specified by the JCO. The current ventilation controls are documented in the existing IOSR LCOs listed below:

LCO 3.3.1 Primary Tank Vapor Space Pressure Monitoring and Alarm Systems
LCO 3.3.2 Primary Tank Vapor Space Pressure
LCO 3.3.3 SST Ventilation System

LCO 3.3.4 DCRT Ventilation System

Ventilation controls as noted in the JCO will also be fully documented in the new IOSR LCOs and ACs being developed as noted below:

LCO 3.3.5 244-AR TK-002 Ventilation System
AC 5.29.3 SST HEPA Breather Filter Controls

It is important to note that LCO 3.3.4 and LCO 3.3.5 both require that dip tube air flow is provided at all times when waste is in the tank. Transfers of waste into DCRTs or 244-AR TK-002 are prohibited if total flow to the dip tubes is less than 3.0 SCFH, or until these two LCOs are fully implemented.

3.2.1.1 Equipment Modifications

Some Dip tube rotameters currently are ranged 0-1.0 SCFH and will be modified/replaced as necessary to implement the ventilation controls of this IP.

3.2.1.2 Procedural and Administrative Modifications

A total of 62 procedures referencing ventilation requirements have been identified. Thorough review of these procedures is required to identify any possible required revisions.

3.2.1.3 Training

Required reading of the new LCOs and classroom training for operations personnel are required prior to fully implementing the flammable gas JCO. Detailed training schedules will be developed within five (5) working days after receipt of DOE approval, and all required training will be completed within 30 (thirty) days after receipt of DOE approval.

3.2.1.4 Implementation Schedule

The ventilation controls specified in this implementation plan will be put in place thirty (30) days after receipt of DOE approval. This includes the completion of all required training and the issuance of updated or revised procedures.

3.2.1.5 Cost Estimates

The costs associated with implementing the ventilation controls are estimated to be $19,840. This estimate is based upon one fully burdened full-time equivalent @ $80 per hour and 4 hours per procedure review and modification. Rotameter replacements will be estimated upon approval of this implementation plan.

3.2.1.6 Waivers and Compensatory Measures

No waivers are requested, nor are any compensatory measures required to implement the ventilation controls of the flammable gas JCO. Waste transfers into DCRTs and 244-AR TK-002 are prohibited if total flow to the dip tubes is less than 3.0 SCFH or until LCOs 3.3.4 and 3.3.5 are fully implemented.

3.2.2 Ignition Source Controls

Ignition source controls shall be applied to equipment installed or used during work activities in tank intrusive locations on a graded basis. Additional controls shall be applied to all equipment used in waste intrusive locations at all times. The flammable gas JCO (WHC-SD-WM-JCO-007, Rev 0) specifies two specific Ignition Source Control Sets:

Ignition Source Control Set #1

1) Mechanical tooling, equipment, and materials (including lubricants, adhesives, gaskets, corrosion inhibitors, epoxies, etc.) shall be constructed of spark resistant material, or shall have been analyzed and evaluated to not be capable of sparking under the applied conditions. Material compatibility shall be evaluated for thermite reaction potential.

2) Electrostatic ignition sources shall be controlled by providing bonding or grounding according to NFPA 77 (1993).

3) Exposed polymer materials shall be rendered incapable of electrostatic charge or discharge potential either by design or through acceptable workaround practices. Use of existing nonconductive polymer equipment and materials may be acceptable for temporary activities, through similar workarounds, provided required flammable gas control limits are employed (e.g., continuing monitoring, stop work if LFL reaches 25%).

4) The surface temperatures of heat-generating devices shall not exceed 160 °C (320 °F). Internal temperatures of heat generating devices may exceed 160 °C (320 °F) if isolated from the gas environment, or if the design of the device enclosure meets requirements for explosion-proof housings.

5) Electrical equipment shall be designed to meet NFPA 70 (1993), Class 1, Division 1, Group B criteria to the maximum extent practical. As a minimum, this shall be interpreted to mean that no single point failure of energized equipment can result in an arc or spark, or gas burn propagation to the environment external to the source enclosure. In the case of waste submerged equipment containing potential ignition

sources, demonstration by design that the equipment is non-sparking under normal operation and is designed to be isolated from the waste intrusive environment is an acceptable alternative.

6) Shutdown of purged and pressurized electrical equipment and purged and pressurized heat-generating equipment, upon loss of protective gas pressure or flow, shall be automatic by design as defined by NFPA 496 (1993) Type X pressurization.

7) Interlocked start-up restrictions of purged and pressurized electrical or heat-generating equipment shall only be allowed upon system sensing of pre-set safety limits. If pressurized enclosures are used to isolate energized components, a minimum of four (4) enclosure volumes shall be purged through the enclosure for energized components, and/or ten (10) volumes shall be purged for enclosed motors prior to controlled start-up of the system components.

Ignition Source Control Set # 2

1) Ignition Source Control Set # 1 items 1 through 4.

2) Electrical equipment shall be designed to meet NFPA 70 (1993), Class 1, Division 2, Group B criteria to the maximum extent practical. As a minimum, this shall be interpreted to mean the equipment in non-sparking under normal operation or, if normally sparking, the sparking component(s) shall be continuously isolated (purged and pressurized) from the potentially flammable gas environment, or the design of the device enclosure shall be of sufficient strength (explosion-proof) to prevent propagation of a gas burn to the environment external to the enclosure.

3) Either automatic shutdown or alarming with manual shutdown is required upon loss of protective gas pressure or flow as defined by NFPA 496 (1993) Type Z pressurization. In ex-tank area applications, electrical equipment that does not meet Class I, Division 2, Group B may be used, if it is automatically shutdown by combustible gas detection systems.

4) Automatic or manual start-up controls of purged and pressurized electrical or purged and pressurized heat-generating equipment shall only be allowed upon system sensing of pre-set safety limits. If pressurized enclosures are utilized to isolate energized components, a minimum of four (4) enclosure volumes shall be purged through the enclosure for energized components, and/or ten (10) volumes shall be purged for enclosed motors prior to controlled start-up of the system components. When combustible gas detection shut down systems are

employed, start-up of equipment shall only be allowed once measured acceptable flammable gas levels are indicated.

These Ignition Source Control Sets shall be applied each tank region as required by the work activity being performed. The application of these control sets to each tank group and work activity is detailed in Table 1.

3.2.2.1 Equipment Modifications

A total of seventeen (17) equipment requirement areas have been identified as necessary to implement Ignition Source Control Sets #1 and #2 in TWRS-managed tanks. The required equipment modifications are specified in Table 2.

3.2.2.2 Procedural and Administrative Modifications

The Ignition Source Control requirements specified in WHC-SD-WM-JCO-007, Rev 0 will be incorporated into AC 5.29.1. In addition, approximately 164 procedures referencing these AC requirements have been identified. Thorough review of these procedures is required to identify any possible required revisions.

3.2.2.3 Training

Required reading of the new ACs and classroom training for operations personnel are required prior to fully implementing the flammable gas JCO. Detailed training schedules will be developed within five (5) working days after receipt of DOE approval, and all required training will be completed within 30 (thirty) days after receipt of DOE approval.

3.2.2.4 Implementation Schedule

The ignition source controls sets specified in this implementation plan will be put in place in accordance with the time schedules provided in Table 2. These time frames include the completion of all required training and the issuance of updated or revised procedures. Overall implementation shall be completed within one hundred and eighty (180) days following receipt of DOE approval.

3.2.2.5 Cost Estimates

The costs associated with implementing the ignition source control sets are listed in Table 3. This table delineates the individual line items for each equipment modification and the estimated cost revising procedures and administrative document. The net projected hardware cost for equipment evaluation and/or modification is approximately $600 K. The estimated costs to review and modify procedures as specified in the ACs is approximately $26,240

based upon one fully burdened full-time equivalent @ $80 per hour and 2 hours per procedure review and modification.

3.2.2.6 Waivers and Compensatory Measures

No waivers are requested. Specific compensatory measures necessary to continue operations in the interim between JCO approval and completion of equipment modification are specified in Table 2. These compensatory measures are temporary in nature and will be rescinded immediately following the completion of equipment modification.

3.2.3 Monitoring Controls

The flammable gas JCO mandates that flammable gas concentrations in intrusive work locations shall be verified to be less than 25% of the lower flammability limit. This requirement shall apply to all manned work activities in waste containing vessels to ensure that flammable conditions in the work space are not present due steady state accumulation and/or recent gas release events.

Manned work shall neither commence nor proceed if flammable gas concentrations are greater than or equal to 25% of the LFL with an exception for gas sampling and necessary actions to reduce gas concentrations, deenergize ignition sources, etc. Installed qualified equipment may be allowed to continue to operate (i.e., not be deenergized) if greater than 25% of the LFL. If flammable gas concentrations are greater than 25% of the LFL a grab sample shall be taken and sent to the lab for analysis. Until gas concentrations less than 25% of the LFL are verified, the equipment and tools used to perform this verification (e.g., wrenches, equipment such as riser covers that must be removed, CGMs) shall meet the requirements of Ignition Source Control Set #2 with the following exceptions.

1) Electrical bonding is not required for openings less than or equal to 1 in. inside diameter.

2) Electrical bonding is not required for use of FIC level gauges, manual tape level gauges, and zip cords.

3) Spark resistant tools are not required for openings less than or equal to one inch inside diameter.

4) Spark resistant tools are not required for loosening nuts/bolts, etc. for the first nominal turn or for final tightening.

Because of the possibility of flammable conditions developing during work as a result of a GRE (particularly during waste disturbing operations), work space (ex-tank intrusive or dome intrusive) monitoring is continued as

specified in Table 4. Continuing monitoring shall mean the use of a continuous monitor (e.g., SHMS) or use of portable CGM with readings read at least every 15 minutes. Ignition source controls as identified in Table 2 shall also apply in these locations to prevent ignition in the unlikely event that flammable conditions develop. All manned work activities must immediately halt if flammable gas concentrations exceed 25% of the LFL with the exceptions noted above.

Unmanned operations such as waste transfers, operation of Air Lift Circulators (ALC), and mixer pumps in actively ventilated tanks do not require continuing monitoring. Gases released will be diluted and swept from the tank by the ventilation flow. Adequate protection is provided by ignition source control set #2 for the short duration that flammable conditions may exist in the unlikely event that a large GRE were to occur.

During unmanned global waste disturbing operation in passively ventilated tanks flammable gas concentrations from GREs may persist for a significant length of time because of the low ventilation flows provided. Continued operation in this condition is imprudent if the flammable gas concentration is greater than 25% of the LFL, therefore continuing monitoring is required. For long duration operations such as saltwell pumping, continuing monitoring can be defined as follows:

1) Monitor dome space and/or saltwell pit once per hour for 5 hours following initiation of pumping, then

2) Monitor dome space and/or salt well pit once per day for the next 3 days (or once per 24 nominal hours run time), then

3) Monitor weekly, (or once per 168 hours nominal run time). Revise sampling period:

   a) Less than 15% of LFL, sample every 7 days, not to exceed 10 days

   b) Greater than 15% to $\leq$ 25% LFL, take daily samples

4) Waste disturbing operation to stop if greater than 25% LFL.

3.2.3.1 Equipment Modifications

No equipment modifications have been identified as required to implement the monitoring controls of the flammable gas JCO.

3.2.3.2 Procedural and Administrative Modifications

The monitoring control listed above shall be incorporated into AC 5.29.2. Approximately 164 procedures referencing monitoring requirements have been identified. Thorough review of these procedures will be required to identify any possible revisions necessary to incorporate the monitoring controls of the flammable gas JCO. This procedure review shall be conducted in concert with Section 3.2.2.2.

3.2.3.3 Training

Required reading of the new ACs and classroom training for operations personnel are required prior to fully implementing the flammable gas JCO. Detailed training schedules will be developed within five (5) working days after receipt of DOE approval, and all required training will be completed within 30 (thirty) days after receipt of DOE approval.

3.2.3.4 Implementation Schedule

The monitoring control specified in this implementation plan will be put in place within thirty (30) days following receipt of DOE approval.

3.2.3.5 Cost Estimates

The costs associated with modifying procedures and administrative control are included in the estimated procedural modification costs of Section 3.2.2.5 above.

3.2.3.6 Waivers and Compensatory Measures

No waivers are requested, nor are any compensatory measures required to implement the monitoring controls of the flammable gas JCO.

Table 1: Ignition Source Control Set Application

Ignition Source Control Sets	Non-Waste Disturbing Operations		Local Waste Disturbing Operations		Global Waste Disturbing Operations		Waste Intruding Equipment
	Ex-Tank Region	Dome Region	Ex-Tank Region	Dome Region	Ex-Tank Region	Dome Region	
Facility Group 1	2	2	2	2	2	2	1
Facility Group 2	-	2	-	2	2*	2	1
Facility Group 3	-	2**	-	2*	-	2*	1
Nontank Waste Transfer	-	-	-	-	-	-	1
DCRT	-	2**	-	2*	-	2*	1
244-AR TK-002	-	2**	-	2*	-	2*	1
244-AR TK-001/003/004	-	-	-	-	-	-	-
Catch Tanks	-	2**	-	2**	-	2**	1
242-S Evaporator	-	-	-	-	-	-	-
242-T Evaporator	-	2	-	2	-	2	1
231-W-151-001, 231-W-151-002, 241-S-302B, 241-TY-302B	-	-	-	-	-	-	-

Notes:

1 - Ignition Source Control Set #1 applies at all times
2 - Ignition Source Control Set #2 applies at all times
2* - Ignition Source Control Set #2 applies only for the duration of the activity
2** - Ignition Source Control Set #2 applies until gas concentrations are verified to be less than 25% of the LFL

Table 2: Ignition Source Control Equipment Requirements

Tank Group	Required Action to Achieve Full Compliance with JCO	Interim Compensatory Measures Until Full Compliance Is Achieved	Scheduled Time to Achieve Full Compliance
Facility Group 1	1) replace all high level detector induction relays (5 tanks)	disconnected	complete
	2) modify all pit leak detector relays to be intrinsically safe (5 tanks)	no waste transfers until relays are replaced	180 days from receipt of DOE approval
	3) de-energize all primary ventilation system pressure switches, damper motors, and electric heaters on a loss of ventilation (AN, AW, and SY farms)	implement deactivation within 2 hours	90 days from receipt of DOE approval
	4) perform a field walkdown to verify that all ex-tank intrusive equipment within 18 diameters (nominally 5 ft) of ventilation inlet filters is in compliance with Ignition Source Control Set #2 and modify or move as necessary	implement walkdown immediately and determine required actions	90 days from receipt of DOE approval
	5) operation of vehicles within 18 diameters (nominally 5 ft) of ventilation inlet filters is excluded	none	90 days from receipt of DOE approval
Facility Group 2	1) replace all high level detector induction relays (21 tanks)	disconnect prior to globally waste disturbing activities, requires DOE approval	90 days from receipt of DOE approval
	2) disable the pan-tilt mechanism of the camera in AN-107	power locked out/implemented	complete
	3) review the design and suitability of the AN-107 mixer pump	power locked out/implemented	complete
	4) modify all DST pit leak detectors in ex-tank intrusive areas before performing waste transfers (22 tanks)	will halt global waste disturbing operations in the event of DST pressurization	180 days from receipt of DOE approval
	5) de-energize all primary ventilation system pressure switches, damper motors, and electric heaters on a loss of ventilation in excess of allowed outage time (all DST farms and SX)	implement deactivation within 2 hours	90 days from receipt of DOE approval
	6) terminate all waste disturbing operations on a loss of active ventilation	none	complete
	7) any ignition sources within 18 diameters from the ventilation intake filter or other open riser must be excluded, modified, or de-energized during global waste disturbing operations	implement and perform walkdown in parallel with Facility Group 1 Item #4	90 days from receipt of DOE approval

Facility Group 3	1) saltwell pumping of S-108, S-110, and T-104 is being conducted with all equipment in the pump pit interlocked with a flammable gas monitor which should be reviewed by the Flammable Gas Equipment Advisory Board	none	complete
Nontank Waste Transfer System	1) replace leak detector relays in valve pits and encasements for active waste transfer system with communication to the tanks (approximately 40 relays)	will halt global waste disturbing operations in the event of tank pressurization	180 days from receipt of DOE approval
DCRT	none identified		
244-AR TK-002	none identified		
244-AR TK-001/ 003/004	none identified		
Catch Tanks	1) any pump pit leak detectors or pumps with thermal overload contacts must be modified to be intrinsically safe or de-energized (approximately 25 relays)	sample associated catch tank pump pits for flammable gas within 7 days prior to transfer	180 days from receipt of DOE approval
242-S	none identified		
242-T	none identified		
231-W-151-001, 231-W-151-002, 241-S-302B, 241-TY-302B	none identified		

Table 3: Equipment Cost Estimates for Implementing Ignition Source Control Sets

Required Action	Hardware Requirements	Hardware Costs	Software Requirements	Software Costs
Replace high level detector induction relays with an intrinsically safe model on 4 Facility Group 1 DSTs in AN/AW farms and 21 Facility Group 2 DSTs in AN/AP/AW/AY/AZ farms.	Perform USQD	$1.3K	PM/S data sheet modification	$4.8K
	Installation ECNs (5 farms)	$25.6K		
	Materials	$19.2K		
	Work package preparation	$12.0K		
	Field modification	$40.0K		
	HPT	$2.5K		
	QA/Safety	$2.6K		
	Contingency @ 20%	$16.6K		
Replace the pit leak detector relays with intrinsically safe models for all Facility Group 1 (5) and Facility Group 2 (22) tanks including all central pump pits and sluice pits in the non-tank waste transfer system that are in communication with the tank vapor space (AN, AP, AW, AY, AZ, and SY farms).	Perform USQD	$1.3K	PM/S data sheet modification	$9.6K
	Installation ECNs (6 farms)	$64.0K		
	Materials	$69.1K		
	Work package preparation	$19.2K		
	Field modification	$144.0K		
	HPT	$9.0K		
	QA/Safety	$6.4K		
	Contingency @ 20%	$48.2K		
Walkdown all Facility Group 1 and 2 DST/AWFs to determine potential ignition sources in the ex-tank intrusive area around ventilation inlet filters.	Relocate and/or modify identified equipment	TBD	Two man walkdown	$6.4K
Modify or remove 24 pump thermal interlock circuits in 12 catch tanks.	Perform USQD	$1.3K	PM/S data sheet modification	$4.8K
	Modification ECNs (12 tanks)	$32.0K		
	Materials	$18.4K		
	Work package preparation	$14.4K		
	Field Modification	$38.4K		
	HPT	$2.4K		
	QA/Safety	$3.2K		
	Contingency @ 20%	$18.2K		
Totals	Hardware	$609.3K	Software	$25.6K

Table 4: Manned Work Activity Entry and Gas Monitoring Requirements

Tank Group	Required Action Item	Compensatory Measures	Scheduled Completion
Facility Group 1	1) continuous monitoring during manned activities for ex-tank and dome intrusive regions	none identified	complete
Facility Group 2	1) continuous monitoring during manned activities in dome region for nonwaste and local waste disturbing operations	none identified	complete
	2) continuous monitoring during manned work activities in ex-tank and dome regions for the duration of global waste disturbing operations	none identified	complete
Facility Group 3	1) entry monitoring only required for nonwaste disturbing activities	none identified	complete
	2) continuous monitoring only during manned local and global waste disturbing operations	none identified	complete
Nontank Waste Transfer Systems	entry monitoring only	none identified	complete
DCRT	entry monitoring only	none identified	complete
244-AR TK-002	1) entry monitoring only required for nonwaste disturbing activities	none identified	complete
	2) continuous monitoring during manned local and global waste disturbing operations	none identified	complete
244-AR TK-001 /003/004	entry monitoring only	none identified	complete
Catch Tanks	entry monitoring only	none identified	complete
242-S	entry monitoring only	none identified	complete
242-T	entry monitoring only	none identified	complete
231-W-151-001, 231-W-151-002, 241-S-302B, 241-TY-302B	entry monitoring only	none identified	complete

CORRESPONDENCE DISTRIBUTION COVERSHEET

Author	Addressee	Correspondence No.
Mr. J. J. Klos, WHC 376-3792	Mr. J. D. Wagoner RL	9653592

Subject: TANK FARMS JUSTIFICATION FOR CONTINUED OPERATION 007 IMPLEMENTATION PLAN

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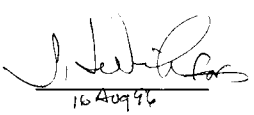	16 Aug 96	O. M. Serrano	R2-54	X
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